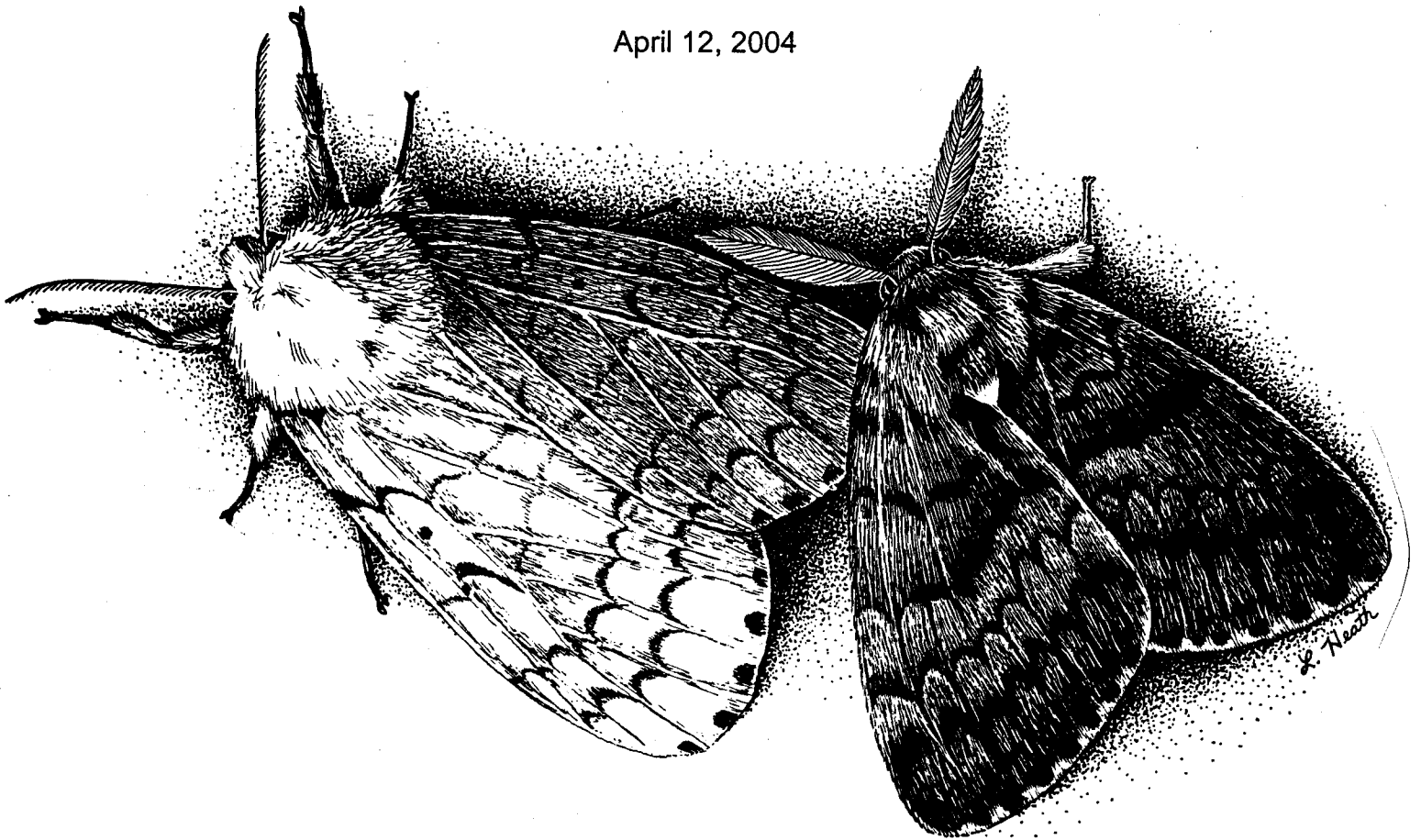


FINAL

ENVIRONMENTAL ASSESSMENT

COOPERATIVE GYPSY MOTH ERADICATION PROJECT
KING, JEFFERSON and LEWIS COUNTIES
WASHINGTON

April 12, 2004



Prepared by
Washington State Department of Agriculture
Plant Protection Division

In cooperation with
United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine



Published for the 2004 Gypsy Moth Eradication Season
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I. PURPOSE AND NEED FOR ACTION

A. Decisions to be Made and Scope of Analysis

1. Introduction

The Washington State Department of Agriculture (WSDA), in cooperation with the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS), is proposing an eradication program with the goal of eliminating an isolated infestation of the non-native gypsy moth, Lymantria dispar (Linnaeus), in King, Jefferson and Lewis Counties, Washington in the spring of 2004.

2. Environmental Analysis and Documentation

In 1995, the USDA Forest Service and APHIS prepared a final environmental impact statement, "Gypsy Moth Management in the United States: a cooperative approach", (hereinafter referred to as FEIS), which described and analyzed methods of gypsy moth control available for use in USDA cooperative programs. WSDA is proposing nothing that was not analyzed in the 1995 FEIS. Therefore, a new programmatic environmental impact statement will not be required.

This Environmental Assessment (EA) is "tiered" to the FEIS in accordance with the Council on Environmental Quality regulations for implementing the National Environmental Policy Act of 1969 (NEPA) (40 CFR 1502.20 and 40 CFR 1508.28). This EA provides the basic background information necessary for the site-specific analysis of the potential environmental effects of WSDA's proposed 2004 Cooperative Gypsy Moth Eradication Project. The FEIS and this site-specific EA jointly constitute the environmental analysis and documentation required under NEPA.

Copies of the FEIS and the EA are available for review at:

Washington State Library
Point Plaza East, Bldg. 1
6880 Capitol Blvd. S
Tumwater, WA 98501

and

USDA, APHIS, PPQ
APHIS Library, 1st floor
4700 River Road
Riverdale, MD 20737

and

USDA, APHIS, PPQ
22000 Marine View Drive S., Suite 201
Des Moines, WA 98198

Additional environmental analysis and documentation has been prepared to satisfy Washington State requirements under Chapter 43.21 (c) of the Revised Code of Washington (State Environmental Policy Act or SEPA), and Chapter 197-11 of the Washington Administrative Code (SEPA rules).

Copies of the SEPA documentation are available for review at:

Washington State Library
Point Plaza East, Bldg. 1
6880 Capitol Blvd. S
Tumwater, WA 98501

3. History and Scope of Project

Since its accidental release in the United States in 1869, the European strain of gypsy moth has spread throughout New England and areas to the north, south and west. It has become established in all or parts of 19 states, the District of Columbia, and parts of Canada. It continues to spread to uninfested areas. The gypsy moth has caused dramatic economic, social, and ecological impacts throughout the infested area (USDA, 1995, vol. II, chapter 1, p. 4).

The European strain of the gypsy moth has been found every year in Washington State since 1974 with the exceptions of 1976 and 1977. The European gypsy moth is usually introduced to Washington State by people visiting or relocating from the infested area of eastern North America. For more than 25 years, WSDA has successfully detected and eradicated new introductions of gypsy moth.

In 1991, the Asian strain of the gypsy moth was found for the first time in Oregon, Washington, and in British Columbia, Canada. Eradication projects conducted in 1992 successfully eliminated the insect from those areas. WSDA has detected and treated introductions of the Asian strain of the gypsy moth in 1991-92, 1994-95, 1995-96, 1996-97, 1997-98 and 1999-2000. These eradication projects have been successful. The Asian strain poses a far greater risk of rapid spread than the European. Unlike females of the European strain, females of the Asian strain may fly and deposit an egg mass miles from where they feed as caterpillars. The Asian strain also poses a greater risk of damage because it feeds on a greater variety of plants (USDA, 1995, vol. II, chapter 1, p. 4).

In 2004, WSDA is proposing to treat three sites that have isolated populations of the European strain of the gypsy moth. One is in the city of Bellevue in King County, the second is in the Port Ludlow area of Jefferson County and the third is in the Mayfield area of Lewis County.

For more information on how the different strains/populations of the gypsy moth are to be treated please see USDA, 1995, vol. II, chapter 1, pp. 9-11.

4. Decisions to be Made

There are three significant decisions, which must be made as a part of evaluating a gypsy moth control action.

The first decision to be made is whether to propose a gypsy moth control project (the absence of a control project is a no-action alternative). The second decision to be made is whether or not tiering this environmental assessment to the USDA 1995 FEIS is appropriate. The third decision to be made is whether to proceed with the preferred alternative as described in the FEIS.

B. Proposed Action

Strategies described in the FEIS depend upon the infestation status of the area: generally infested, transition, or uninfested. The three strategies of suppression, eradication, and slow the spread -- or their absence -- are included in the six alternatives described in the FEIS. The sixth alternative is the preferred alternative presented in the FEIS. The sixth alternative is comprised of all three strategies.

Based on the infestation status of "no established population" Washington State's strategy in 2004 will be eradication.

For a more detailed description of the alternatives described in the FEIS, please refer to an excerpt from the FEIS in Appendix C of this EA.

Treatments available for eradication projects include: (the biological insecticides) Bacillus thuringiensis var. kurstaki (B.t.k.) and the gypsy moth nucleopolyhedrosis virus (Gypchek); a chemical insecticide (diflubenzuron); and treatments employing mass trapping, mating disruption, and sterile insect release techniques. A detailed description of these treatments is available in Appendix A of the FEIS.

C. Need For Action

1. Economic, Social, and Ecological Impacts

In order to avoid undesirable economic, social, and ecological impacts to residents, communities and businesses in Washington State, WSDA in cooperation with USDA APHIS, proposes to eradicate three isolated infestations of European gypsy moth. One is in the city of **Bellevue** in King County, the second is in the **Port Ludlow** area of Jefferson County and the third is in the **Mayfield** area of Lewis County.

Trapping (utilizing pheromone-baited traps) and visual inspections for alternate life stages such as egg masses have detected gypsy moth infestations in the aforementioned areas. The gypsy moth is able to survive and reproduce in Washington State, as evidenced by numerous past isolated infestations. The current infestations, if left unchecked, could spread across large areas.

Trees in forests and orchards, and residential and municipal shade trees and landscape plantings would be damaged and killed. Recreational and aesthetic values associated with trees and forested land would be diminished (USDA, 1995, vol. II, chapter 2, p. 29). Species composition of the vegetation on forested land could change, affecting the quantity and variety of food available for wildlife (USDA, 1995, vol. II, chapter 2, p. 23).

Water quality could be adversely affected in a number of ways including: 1) increased siltation from rapid runoff of rainfall from defoliated areas; 2) increases in water temperature as it flows through areas made shadeless; and 3) nutrient overloading from the deposition of large quantities of caterpillar droppings (USDA, 1995, vol. II, chapter 2, pp. 24-25).

The pesticide load in the environment would likely increase in quantity, variety, and net detrimental environmental impact as home and business owners respond to ever-increasing numbers of gypsy moth caterpillars, the damage they cause, and the nuisance they represent (USDA, 1995, vol. II, chapter 4, p. 76).

Human health effects associated with the presence of large numbers of gypsy moth caterpillars have been reported, including rashes and welts typical of allergic reactions, and respiratory complaints. These effects have been attributed to the irritating nature of the bristles found on the caterpillars. In some instances the reactions have been severe enough to require medical attention (USDA, 1995, vol. III, chapter 3, pp. 2-3), (Allen et al., 1991), (Tuthill, et al., 1984), (Aber, et al., 1982), (Beaucher and Farnham, 1982), (Shama, et al., 1982).

Agricultural, horticultural and forestry enterprises are dependent upon markets beyond the borders of Washington State. Washington must be able to comply with the plant pest and disease regulations of the Federal government, other states, and international markets. The establishment and spread of the gypsy moth in Washington State would result in the imposition of quarantines (USDA, 1995, vol. II, chapter 2, p. 29). The levels of production and value of plant products would be adversely affected.

2. Project Goals and Objectives

The WSDA, in cooperation with USDA-APHIS and other appropriate Federal, State and local agencies, proposes to take action to eradicate three isolated infestations of European gypsy moth. One site is in the city of Bellevue in King County, the second is in the Port Ludlow area of Jefferson County and the third is in the Mayfield area of Lewis County. The action will be designed to give the project the best chance for

achieving the goal of eradicating the gypsy moth infestations while minimizing risks to human health as well as minimizing detrimental environmental consequences. This action will be taken in order to prevent the establishment and spread of this pest insect and thereby avoid the adverse economic, social, and ecological effects associated with large-scale gypsy moth infestations.

D. Authorizing Laws and/or Policies

1. State Authorizing Laws

WSDA has authority under Chapter 17.24 of the Revised Code of Washington, Insect Pests and Plant Diseases, to eradicate or control insect pests that may endanger the agricultural and horticultural industries in the state of Washington.

2. Federal Authorizing Laws

The USDA-APHIS has broad discretionary authority to prevent the establishment or spread of plant pests. See 1995 FEIS, volume 2, chapter 1, pages 8 and 9, "Statutory Authorities", for more information.

3. Environmental Laws and Other Regulations

Many environmental laws, authorities and Executive Orders of the President influence how actions to manage pests, including the gypsy moth, are implemented at the site-specific level. Such laws include the National Environmental Policy Act; the Washington State Environmental Policy Act; the Federal Insecticide, Fungicide, and Rodenticide Act; the Clean Water Act and the Endangered Species Act. See 1995 FEIS, volume 2, chapter 1, pages 8 and 9, "Statutory Authorities", for more information.

II. PUBLIC INVOLVEMENT AND ISSUES

A. Public Notification and Involvement

In the **early fall of 2003** Washington State Department of Agriculture (WSDA) employees made personal contact with some residents and businessmen at Port Ludlow, Bellevue, and Mayfield. This contact was made as the employees searched for egg masses and other evidence of gypsy moth activity at the three sites where multiple catches of moths had been made earlier in the summer.

On December 15, 2004 letters were sent to stakeholders in Port Ludlow, Bellevue, and Mayfield.

The letters said the following: 1) A gypsy moth infestation has been located in the community. 2) WSDA is proposing to eradicate the infestation the site with the biological insecticide *Bacillus thuringiensis* var. *kurstaki* (Btk). 3) WSDA will soon begin

a public information campaign to inform local residents and community leaders of the infestation and proposed treatment.

The stakeholders to whom letters were sent included state legislators, county commissioners, county council members, mayors, and city council members.

On December 18, 2003 WSDA published a news release announcing that they were proposing action in the spring of 2004 to prevent the European gypsy moth from becoming established at an 18-acre site in Port Ludlow, an 11-acre site in Bellevue, and 7.5-acre site in Mayfield.

The news release emphasized the following: 1) Before a decision is made on the WSDA proposal, WSDA will prepare a State Environmental Policy Act (SEPA) checklist and National Environmental Policy Act (NEPA) environmental assessment for public review and comment, and consult other state and federal agencies on the proposal. 2) Residents whose properties were located in the proposed treatment zones will receive written information on the infestation and proposed treatment. 3) Citizens are encouraged to call the WSDA toll-free hotline (1-800-443-6684) or visit the WSDA Web site (www.agr.wa.gov, and click on "gypsy moth") if they have any questions about the infestation or proposed eradication. 4) Open houses will be held in the tree communities in February so residents can review display boards, pick up written information, view a videotape, and ask questions of entomologists regarding the proposal.

In late December and early January numerous news articles appeared in Port Ludlow, Bellevue, and Mayfield area newspapers as a result of the news release being dispatched.

On January 22, 2004 letters with three enclosures were sent to residents in Port Ludlow and Mayfield, and to businesses in Bellevue (there are no residents in the proposed Bellevue treatment zone).

The letters: 1) Contained details of the infestation. 2) Informed residents and businesses that WSDA was proposing to eradicate the problem by treating the site with a biological insecticide, *Bacillus thuringiensis* var. *kurstaki* (Btk) 3) Provided the time and place when an open house would be held in their community so they could gather additional information on the infestation and proposal. Enclosed to the letter were a gypsy moth fact sheet, map of the proposed treatment site, and a copy of the news release sent earlier to the media.

On February 3, 2004 the media and stakeholders were provided electronically with an update of WSDA's proposal to eradicate gypsy moth infestations in Port Ludlow, Bellevue, and Mayfield.

Stakeholders were informed of the following: 1) Letters had been sent January 22, 2004 to residents and businesses containing details of the infestation and proposed

treatment and inviting them to an open houses to be held in their community. 2) A gypsy moth open houses would be held in the community at a date, time, and place listed in the letter. 3) Two environmental documents detailing the impact of the proposed treatment on the environment would be posted to WSDA's Web site (www.agr.wa.gov) by early March. The two documents would also be made available in hard copy at a local library (the address and telephone number of the library were provided). 4) Three key points being stressed by WSDA in conversations with residents and community leaders were: a) The gypsy moth was first detected in Washington in 1974 but a permanent population has never been established. b) WSDA has conducted 73 eradication projects since 1979 and all have been successful. c) The biological insecticide proposed for use [*Btk*] has a proven safety record.

On February 9, 2004 an open house was held in Port Ludlow at the North Bay Beach Club.

On February 11, 2004 an open house was held in Bellevue in the cafeteria at Sammamish High School.

On February 17, 2004 an open house was held in Mayfield in the library at Mossyrock High School.

On February 18, 2004 letters were sent to residents in Port Ludlow, and Mayfield, and to businesses in Bellevue requesting permission to come on their property beginning in late April or early May and apply three treatments of a biological insecticide, 7 to 14 days apart. Permission could be granted one of three ways: 1) Calling the WSDA toll-free hotline (1-800-443-6684) and giving permission verbally. 2) Completing a form enclosed in the letter and mailing it to WSDA in self-addressed envelope also enclosed in the letter. 3) Faxing the completed form to WSDA at (360) 586-8509.

B. Issues and Concerns

Concerns were raised about the proposed treatments, their effects on human health and on non-target organisms. Those issues raised are addressed in this EA and in the FEIS to which this EA is "tiered".

III. AFFECTED ENVIRONMENT

A. 2004 SITE DESCRIPTIONS (see Appendix B for maps)

Bellevue (Bellevue South, WA 7.5X15 minute quadrangle, S28, 33 T25N R5E)

- King County, Washington
- Approximately 11 acres
- Zoning: Commercial
Office
- Approximately 15 properties in the proposed treatment area.
- Proposed Boundaries: The boundaries of the proposed site are: on the west, just west of 119th Ave NE; on the east, just east of 120th Ave NE; on the north, approximately 425ft north of NE 8th St; and on the south, approximately 200ft south of NE 8th St.
- Vegetation
The proposed treatment area is primarily comprised of deciduous trees. Canopy coverage is less than 5%, tree height is variable with trees up to 60 feet.
- Critical/Sensitive Areas: None within the proposed treatment area however, Lake Sturtevant/Bellevue is 150 feet to the north
Sturtevant creek is 250 feet to the west.
And a 40% Slope is 150 feet to the east
- Catch History
1 European Gypsy Moth was caught in the area during the 2001 summer survey.
6 European Gypsy Moth were caught in the area during the 2002 summer survey.
21 European Gypsy Moths were caught in the area during the 2003 summer survey.
- Alternate Life Stages
6 European Gypsy Moth egg masses and numerous pupal cases were found in this area in the late summer of 2003.

Port Ludlow (Port Ludlow, WA 7.5 minute quadrangle, S17 T28N R1E)

- Jefferson County, Washington
- Approximately 18 acres
- Zoning: MPR – Single Family

- Approximately 32 properties in the proposed treatment area.
- Proposed Boundaries: The western boundary is Osprey Ridge Dr.; the northern boundary is Goldfinch Ln.; the eastern boundary lies just to the west of Rainer Ln.; and the southern boundary is just to the north of Hummingbird Ct.
- Vegetation
The proposed treatment area is a mix of deciduous and coniferous trees growing in and around residential properties and a small canyon. Canopy coverage is approximately 50%, tree height is variable with deciduous trees in excess of 100 feet.
- Critical/Sensitive Areas: Type 4 Stream (seasonal)
 Slight Landslide Hazard
- Catch History
14 European Gypsy Moths were caught in this area during the 2003 summer survey.
- Alternate Life Stages
3 European Gypsy Moth egg masses, numerous pupal cases, cast skins and a dead female Gypsy Moth were found in this area in the late summer of 2003.

Mayfield (Mayfield Lake, WA 7.5 minute quadrangle, S35 T13N R2E)

- Lewis County, Washington
- Approximately 7.5 acres
- Zoning: RDD 1-5 (Rural Development District 1 house/5 acres)
- Approximately 2 properties in the proposed treatment area.
- Proposed Boundaries: The boundaries of the proposed site are: to the east Flynn Rd, the remaining boundaries extend in a half circle with a radius of 450 feet to the north, south and west of a residential property to the west of Flynn Rd. The northern boundary is just to the south of Ciannigan Hill Rd.
- Vegetation
The proposed treatment area is primarily deciduous trees growing in and around a residential property and a farm. Canopy coverage is less than 10%, tree height is variable with deciduous trees up to 70 feet.
- Critical/Sensitive Areas: None within the proposed treatment area however,
 An undelineated Wetland is 300 feet to the southwest

- Catch History
8 European Gypsy Moths were caught in this area during the 2003 summer survey.
- Alternate Life Stages
3 European Gypsy Moth pupal cases and one cast skins were found in this area in the fall of 2003.

B. Threatened, Endangered, and Sensitive Species

As required by the Endangered Species Act of 1973, the USDA is taking part in section 7 consultation with both the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries). In addition the WSDA has consulted with the Washington State Department of Fish and Wildlife (WDFW) and the Washington State Department of Natural Resources (DNR). These agencies provided maps or other data intended to aide in the identification of habitats of concern and the presence of listed, proposed, candidate, threatened or endangered species. See Appendix G.

The information provided by WDFW Priority Habitats and Species Program did not identify any threatened or endangered species on the **Bellevue** site, however, a number of raptor nesting sites were listed as occurring in the area. All listed raptor nesting sites are well over one half mile from the proposed site. Also, listed were records of bald eagle breeding occurrence well over one mile from the proposed site. WDFW also listed the presence of priority anadromous fish and priority resident fish in the area. The priority anadromous fish listed include fall chinook, coho salmon and sockeye salmon. The priority resident fish listed include resident cutthroat and rainbow trout.

The information provided by WDFW Priority Habitats and Species Program did not identify any threatened or endangered species on the **Port Ludlow** site, however, osprey, great blue heron and purple martin nesting sites were listed as occurring in the area. All listed nesting sites were well over one quarter mile from the proposed site. Also, listed was a record of a bald eagle breeding occurrence well over one half mile from the proposed site. WDFW also listed the presence of priority anadromous fish and priority resident fish in the area. The priority anadromous fish listed include chum salmon, coho salmon and winter steelhead. The only priority resident fish listed was resident cutthroat.

The information provided by WDFW Priority Habitats and Species Program did not identify any threatened or endangered species on the **Mayfield** site, however, osprey and bald eagle nesting sites were listed as occurring in the area. All listed nesting sites were well over one half mile from the proposed site. Also, listed was a record of a federal species of concern van dyke's salamander well over one mile from the proposed site. In addition elk and bald eagle were listed as concentrated while

harlequin ducks, osprey and bald eagle were listed as a breeding occurrence. WDFW also listed the presence of priority resident fish in the area. The priority resident fish listed include resident cutthroat and rainbow trout.

A retrieval of information from the WDFW butterfly database did not name any threatened, endangered or sensitive species on or near this site. See Appendix G.

The DNR Washington Natural Heritage Program reviewed their Natural Heritage database. The DNR found no records for rare plants or high quality ecosystems in the vicinity of this project. See Appendix G.

C. Other Environmental Consultation

The USDA is taking part in Endangered Species Act Section 7 consultation with both the United States Department of Interior Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries).

The WSDA is taking part in a water quality consultation with the Washington State Department of Ecology (DOE).

IV. TREATMENT ALTERNATIVES

A. Treatment Alternatives

WSDA is proposing to conduct an Integrated Pest Management (IPM) program to eradicate gypsy moth in Washington State. Integrated Pest Management involves selecting those options and techniques that give the best chance of meeting the project goal of eradication. The FEIS contains a range of alternatives from which WSDA has selected an IPM strategy. The treatment alternatives detailed in the FEIS include:

1. Bacillus thuringiensis var. kurstaki (B.t.k.)
2. Diflubenzuron
3. Gypchek
4. Mass trapping
5. Mating disruption
6. Sterile release

B. Preferred Treatment Alternative

The WSDA/USDA-APHIS gypsy moth eradication project IPM strategy proposed for 2004 includes the use of the biological insecticide (B.t.k.) Foray 48B (EPA Reg. No.

73049-46). This insecticide may be mixed with the spreader-sticker Bond. Treatments will also include visual inspections for and removal of egg masses when found, and be followed up by delimitation trapping. This IPM strategy will give the project the best chance to achieve the goal of eradicating the gypsy moth infestations while minimizing risks to human health and minimizing detrimental environmental consequences. Details of the proposed ground applications follow:

Ground applications:

The proposed action would involve three applications of Bacillus thuringiensis var. kurstaki (B.t.k.) with ground-based equipment at a rate of approximately 24 Billion International Units (BIU) per acre to foliage within the designated treatment areas. The applications would be made 3-14 days apart and would occur during the period between April 15 and June 30, 2004. Provisions would be made for a fourth ground application of B.t.k. if substantial rainfall occurs too soon following the completion of an application. Exact timing of the applications would be dependent on development of gypsy moth larvae and/or foliage as determined by WSDA.

A spreader-sticker (Bond) may be utilized, as an adjuvant at a rate of up to 16 ounces per 100 gallons of tank mix. Mixing the formulation with adjuvants for gypsy moth eradication projects has been common practice (USDA, 1995, vol. II, A-4).

All ground applications would be conducted in accordance with all applicable federal, state, and local laws and regulations, and would adhere to the Standard Operating Procedures developed by WSDA for this project. See Appendix F.

Follow up:

A follow up trapping program employing pheromone-baited traps in the summer of 2004 would contribute to the success of the eradication project by removing males from any residual population, delimiting the location of any residual populations of Gypsy moths, and aiding in the evaluation of the project.

In the event of multiple moth catches in a treatment area, visual inspections for alternate life stages (egg masses etc.) would be performed in the fall of 2004 to aid in determine if re-treatment actions should be considered.

C. Treatment Alternatives Not Selected

The remaining treatment alternatives available for this proposed eradication project, as outlined in the FEIS, were not selected due to lack of availability, unproven efficacy, or environmental/biological concerns (USDA, 1995, vol. II, pp. A3-10).

V. ENVIRONMENTAL CONSEQUENCES

A. Human Health and Safety

1. Bacillus thuringiensis var. (kurstaki) (B.t.k.)

The use of B.t.k. for the eradication of isolated gypsy moth infestations is expected to have no adverse impact on human health or the environment. Various strains of *Bacillus thuringiensis* (B.t.) are a naturally occurring bacterial component of soils worldwide. Modern aqueous formulations of B.t.k. used in gypsy moth control projects contain no organic solvents and have an excellent safety record associated with their use in gypsy moth suppression and eradication projects. An exemption from the requirement of a tolerance has been established for residues of B.t.k. in or on all raw agricultural commodities. This exemption stipulates that manufacturers of B.t.k. test each lot for pathogenicity and vertebrate toxicity. See Appendix E for a Sample Label and MSDS.

A detailed discussion of the human health effects of B.t.k. may be found in the 1995 FEIS vol. II, chapter 4, pp. 13-17, and in vol. III, chapter 4.

Due to advances in scientific knowledge, the law requires that pesticides which were first registered before November 1, 1984 be reregistered to ensure that they meet today's more stringent standards. In March of 1998 the United States Environmental Protection Agency came out with a Reregistration Eligibility Decision (EPA, 1998) in which they concluded:

Based on the reviews of the generic data for the active ingredient *Bacillus thuringiensis*, the Agency has sufficient information on the health effects of *Bacillus thuringiensis* and on its potential for causing adverse effects in fish and wildlife and the environment. The Agency has determined that *Bacillus thuringiensis* products, manufactured, labeled and used as specified in this Reregistration Eligibility Decision, will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, the Agency concludes that products containing *Bacillus thuringiensis* for all uses are eligible for reregistration (EPA, 1998).

In the spring of 1999, Foray 48B was applied by aircraft to 52 square miles of Southern Vancouver Island to combat an infestation of European gypsy moth. Approximately 80,000 residents lived in the spray zones. The Capital Health Region coordinated a human health study of possible short-term health effects. The resulting report (Capital Health Region, 1999) concluded:

The results of this project did not show a relationship between aerial spraying of Foray 48B and short-term human health effects. Although some people self-reported health problems that they attributed to the spray program, the research

and surveillance methods used in this project did not detect any change in health status that could be linked to the spray program. Our results showed that many of the health complaints people reported during the spray were as common in people before the spray as they were shortly after the spray. This conclusion is consistent with those of previous studies of the possible health effects of Btk-based pesticide spray programs.

Exposure to B.t.k. spray resulting from its use as proposed in this gypsy moth eradication project is unlikely to cause significant human health effects. However, it is good practice to minimize exposure to any insecticide. One of the conclusions reached in the Oregon study by Green, et al.(1990), was that, "the level of risk for B.t.k. and other existing or future microbial pesticides in immunocompromised hosts deserves further study."

In addressing the issue of exposure to immunocompromised individuals and the general public to the treatments proposed in Spring 2004, the following recommendations were made by the Washington State Department of Health in February, 2004 (Appendix D).

The Washington State Department of Health (DOH) recommends that people in the area to be sprayed minimize exposure by doing the following:

1. Stay indoors for at least 30 minutes after the spraying to allow droplets to settle.
2. Wait until the spray has dried before letting skin touch the treated leaves and bushes.
3. Wash skin with soap and water if you come in contact with the spray.
4. People in the sprayed area can sign up with the Department of Agriculture (800-443-6684) to be notified the day before spraying. (WSDOH, 2004, see Appendix D)

2. Bond

Bond may be used as an adjuvant with the insecticide utilized in this proposed eradication program. Bond is a non-ionic spreader-sticker which acts as an adjuvant when mixed with insecticides. Bond is not an eye or primary skin irritant per the Federal Hazardous Substances Labeling Act. In the unlikely event that overexposure were to occur, local irritation might be possible, especially in sensitive individuals. Systemic toxic effects are unlikely. See Appendix E for a Sample Label and MSDS.

3. General Precautions

The WSDA will take the following additional steps to assist the public in avoiding or reducing exposure to the spray material:

1. The Pesticide Sensitive Individuals database, maintained by the Pesticide Management Division of the WSDA, will be checked for people living in or near the proposed treatment area who require advance notification.
2. The WSDA will offer a toll-free telephone line with information regarding scheduled treatment days.
3. The WSDA will provide notification calls the day before scheduled applications to any resident in the proposed treatment area requesting them.
4. During ground treatments WSDA on-site spray block monitors will notify residents before the actual application to their property.
5. During ground treatments WSDA on-site spray block monitors will notify bicyclists, joggers and other pedestrians that they are approaching the treatment area.
6. Information will be provided to residents of the treatment area about how to avoid or reduce exposure to the spray material.

B. Non-Target Organisms

1. Animals

Bacillus thuringiensis var. (kurstaki) (B.t.k.)

A detailed discussion of the ecological effects of B.t.k. on non-target organisms may be found in the 1995 FEIS vol. II, chapter 4, pp. 52-55, and in vol. IV, chapter 5, pp. 5-10.

As used in gypsy moth eradication projects, B.t.k. has not been shown to adversely affect fish, birds, mammals, or most non-target insects, including honey bees (USDA, 1995, vol. II, chapter 4, pp. 54-55). It is expected that B.t.k. may kill other lepidopteran larvae (leaf-eating caterpillars) if they are present in project areas when treatments occur. In turn, animals dependent on caterpillars as food theoretically may be affected. However, reductions in native caterpillar populations are expected to be temporary due to the brief residual effectiveness of B.t.k. deposits on foliage (4 to 10 days), the high reproductive capacity of most lepidoptera, and recolonization from adjacent untreated areas (USDA, 1995, vol. II, chapter 4, pp. 54-55). The small size of the proposed treatment areas should aid in the recolonization process.

A study conducted in Oregon in connection with gypsy moth control programs in 1986 and 1987 found reduced numbers of caterpillars immediately following B.t.k. treatments and reduced species diversity. This study also found that recovery in numbers of non-target caterpillars began the same season, but that recovery of species diversity lagged behind (Miller, 1990).

One study has shown that B.t.k. could interfere with the biological control of the noxious weed tansy ragwort by cinnabar moth larvae if applied to areas where the weed occurs when late-instar larvae are active (James, et al., 1993). However, an intentionally introduced species of flea beetle has more impact as the primary biological control agent on tansy ragwort (L.C. Burrill, et al. 1994). It is not anticipated that this proposed project would have any adverse impact on flea beetle populations.

Two studies examined the indirect effect of B.t.k. on the reproductive success of insectivorous birds through a possible reduction in food supply. The studies reported no significant differences between treated and untreated areas in numbers of eggs hatched or in nestling growth and development. When caterpillars weren't available, the birds switched to other available prey (Gaddis, 1987), (Gaddis and Corkran, 1986).

There is no evidence of significant adverse impacts of B.t.k. on aquatic organisms. In a study conducted on a benthic stream community there was no evidence that addition of B.t.k. to stream mesocosms created adverse effects for these communities even at greater than 100 times expected exposure rates (Richardson and Perrin, 1994).

2. Plants

Bacillus thuringiensis var. (kurstaki) (B.t.k.)

B.t.k. is non-toxic to plants. B.t.k. is sensitive to meteorological effects once it has been applied to plant surfaces. B.t.k. is readily removed from plant surfaces by rain and is rapidly degraded by sunlight (USDA, 1995, vol. IV, chapter 7, pp. 15). The use of Bond will help slow the removal and degradation of B.t.k. by both rain and sunlight.

Changes in soil productivity and fertility due to B.t.k. are not likely. B.t.k. persists for a relatively short time, B.t. is known to occur naturally in soils worldwide, and applications of insecticides containing B.t. do not appear to increase levels of B.t. in soil (USDA, 1995, vol. I, p. 19). For more information about the fate of B.t.k. in the soil refer to 1995 FEIS, vol. 4, chapter 7, p. 16.

3. Threatened, Endangered, and Sensitive Species

No threatened, endangered, or sensitive species are known to be in or near the proposed treatment sites. In reference to the species listed in the Affected Environment section of this EA all occur well outside of the proposed treatment sites. Therefore, it is not anticipated that the proposed use of B.t.k. would adversely effect these named species.

VI. MONITORING

During the treatment operation, a WSDA-designated monitor will observe all mixing and application of the spray material to ensure compliance with all federal, state, and local laws and regulations and adherence to the Standard Operating Procedures. See Appendix F.

The treatment sites will be intensively monitored in the summer of 2004 and 2005 using pheromone-baited traps to determine the effectiveness of the treatment, assist in the eradication and delimit any residual populations of gypsy moths. This monitoring may indicate a need for further action.

VII. CUMULATIVE EFFECTS

No cumulative effects due to the proposed action are anticipated.

VIII. SUMMARY

This EA has analyzed the potential environmental effects of the proposed WSDA and USDA APHIS treatment program. This analysis was based on the 1995 USDA FEIS entitled, "Gypsy Moth Management in the United States: a cooperative approach" and the preferred alternative strategy proposed by the Washington State Department of Agriculture and USDA-APHIS for eradicating Gypsy moths at three sites in Washington State. The WSDA/USDA-APHIS gypsy moth eradication project strategy proposed for 2004 includes the use of the biological insecticide (B.t.k.) and the spreader-sticker Bond, followed up by trapping, visual inspections and removal of egg masses where appropriate. It is believed that this IPM strategy will give the project the best chance of achieving the goal of eradicating the gypsy moth infestations while minimizing risks to human health and the environment.

To summarize:

- A. B.t.k. used as described in this Environmental Assessment presents minimal risk of significant impact on human health.
- B. It is not anticipated that any non-target animal or plant populations would be adversely affected due to the limited size of the treatment areas. Any detrimental effects on susceptible non-target organisms would be transient and these populations would recover as individuals from nearby untreated areas re-colonized the treatment areas.
- C. No threatened, endangered, or sensitive species would be adversely affected by this eradication project.

- D. No detrimental effects on vegetation, water, or soil are known or anticipated due to this eradication project.
- E. No cumulative effects are known or anticipated.

IX. LIST OF AGENCIES AND PERSONS CONSULTED/NOTIFIED

United States Department of Agriculture, Animal and Plant Health Inspection Service, Dr. Clinton Campbell, on content and style of EA.

Washington State Department of Health, Barbara Morrissey, for review of the proposed treatment with regard to human health concerns.

Washington State Department of Natural Resources, Natural Heritage Program, Ms. Sandy Swope Moody, for review of the proposed treatment area for the presence of sensitive species or habitats.

Washington State Department of Natural Resources, Mr. Dave Cole, for determination and advice with regard to forest practices at the Jefferson Co. site.

Washington State Department of Fish and Wildlife, Ms. Lori Guggenmos, for review of the proposed treatment area for the presence of sensitive species or habitats.

Washington State Department of Fish and Wildlife, Ms. Ann Potter, for review of the proposed treatment area for the presence of sensitive lepidopteran species.

Washington State Department of Fish and Wildlife, Mr. Steve Manlow, Lewis Co. regional habitat program manager.

Washington State Department of Fish and Wildlife, Mr. Rich Costelo, King Co. regional habitat program manager.

Washington State Department of Fish and Wildlife, Mr. Steve Kalinowski, Jefferson Co. regional habitat program manager.

X. LIST OF PREPARERS

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XI. APPENDICES

- A. References
- B. Treatment Site Maps
- C. Alternatives Described in 1995 FEIS
- D. Washington State Department of Health Recommendations
- E. Product Labels & Material Safety Data Sheets
- F. Standard Operating Procedures
- G. Letters and Permits received through interagency consultation concerning threatened, endangered, and sensitive species and habitats